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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/711,684	11/10/2000	Thorkell Gudmundsson	001340.P080	7380

7590

03/18/2004

Sanjeet K. Dutta  
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP  
Seventh Floor  
12400 Wilshire Boulevard  
Los Angeles, CA 90025-1026

EXAMINER

ESCALANTE, OVIDIO

ART UNIT

PAPER NUMBER

2645

13

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/711,684

**Applicant(s)**

GUDMUNDSSON ET AL.

**Examiner**

Ovidio Escalante

**Art Unit**

2645

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-13, 15-25, 27-36 and 38-40 is/are rejected.
- 7) ☒ Claim(s) 14, 26, 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### DETAILED ACTION

1. This action is in response to applicant's amendment filed on February 23, 2004, **Claims 5-40** are now pending in the present application.

#### *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 23, 2004 has been entered.

#### *Claim Objections*

3. Claim 18 is objected to because of the following informalities: claim 18 depends upon canceled claim 1. Appropriate correction is required.

#### *Claim Rejections - 35 USC § 103*

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 5-9,11,16,17,19-23,25,27-34,36,38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming-Dahl US Patent 6,442,495 in view of Moher US Patent 6,161,209.

*Regarding claims 5,20 and 31*, Fleming-Dahl teaches a method, an article of manufacture comprising a program storage medium readable by a computer and a computer readable medium containing executable instructions which, when executed in a processing

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system causes a system to perform a method for diagnosing impairments in a communications system, (col. 1, lines 4-9,13-54), the method comprising:

accumulating statistical information about the impairments, (col. 3, lines 47-58; col. 4, lines 32-46; fig. 1) and

collecting a plurality of probability density functions corresponding to a signal-to-noise ratio of different combinations of the impairments and at least one signal line of the communication system, (col. 1, lines 33-36; col. 4, lines 26-46).

While Fleming-Dahl teaches of using derived statistical models for determining the impairments in the lines, Fleming-Dahl does not specifically teach of creating a priori statistical models and updating the a priori statistical models using a posteriori statistical model.

Moher teaches of a method for creating a priori statistical models, (abstract; col. 3, lines 5-20) and updating the a priori statistical models using a posteriori statistical models of the impairments, (abstract; col. 3, lines 21-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Fleming-Dahl by creating a priori statistical models and updating the models using a posteriori models as taught by Moher so that the statistical models can be updated and can provide a more accurate model for determining impairments in the line.

***Regarding claims 6,21 and 32***, Fleming-Dahl teaches wherein the impairments are external (out of domain) impairments, (col. 1, lines 28-54)

***Regarding claims 9,22,25,27,33,36 and 38***, Fleming-Dahl teaches detecting signal to noise ratio change, (col. 1, lines 55-65) and collecting statistical data about an aggregate signal-

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to-noise ratio of the communication system, (col. 3, lines 47-58) and about aggregate power attenuation values, (col. 1, lines 28-44).

***Regarding claims 11,23 and 34***, Fleming-Dahl teaches wherein the impairments are internal (in domain) impairments, (col. 1, lines 28-54).

***Regarding claims 16,28 and 39***, Fleming-Dahl teaches performing a statistical parameter estimation, (col. 1, lines 28-54; col. 3, lines 47-58).

***Regarding claims 17,29 and 40***, Fleming-Dahl teaches performing a hypothesis test, (col. 1, lines 28-54).

***Regarding claims 19 and 30***, Fleming-Dahl teaches a computer readable medium containing executable instructions which, when executed in a processing system, cause said system to perform a method and an article of manufacture comprising a program storage medium readable and a computer and tangible embodying at least one program of instruction executable by said computer to perform a method (col. 1, lines 13-54) comprising:

compiling statistical models of physical layers of a communication system, (col. 3, lines 47-58; col. 4, lines 32-46);

collecting a plurality of probability density functions corresponding to a signal-to-noise ratio of different combination of the impairments and a least one signal line of the communication system, (col. 1, lines 33-36; col. 4, lines 26-46).

While Fleming-Dahl teaches of using derived statistical models for determining the impairments in the lines, Fleming-Dahl does not specifically teach of creating a priori statistical models and diagnosing at least one impairment in the system using the a priori distribution.

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Moher teaches of a method for creating at least one a priori distribution, (abstract' col. 3, lines 5-20); storing the statistical models and the a priori distribution in a storage medium, (col. 3, lines 5-20); and diagnosing at least one impairment in the communication system using the statistical models and the a priori distribution, (col. 3, lines 21-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Fleming-Dahl by creating a priori statistical models and updating the models using a posteriori models as taught by Moher so that the statistical models can be updated and can provide a more accurate model for determining impairments in the line.

6. Claims 10,12,13,15,18,24, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming-Dahl in view of Coiffi US Patent 5,887032.

***Regarding claim 10,12,18,24 and 35***, while Fleming-Dahl in view of Moher teaches and suggests that the invention can be applied to any transmission medium, Fleming-Dahl and Moher do not specifically teach of the communication system is a DSL system.

Coiffi teaches that it was well known in the art to determine impairments in a communication system and wherein the communication system is a DSL system, (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Fleming-Dahl and Moher by incorporating their system for use in a DSL system so that any transmission system can be used and so that impairments can be diagnosed in any type of transmission system.

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***Regarding claims 13 and 15***, Fleming-Dahl teaches collecting statistical data about an aggregate signal-to-noise ratio of the communication system, (col. 3, lines 47-58) and collecting statistical information about the aggregate power attenuation values, (col. 1, lines 28-44).

7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming-Dahl in view of Bradley US Patent 3,814,868.

***Regarding claims 7 and 8***, while Fleming-Dahl teaches of the external impairments being multiple variables, Fleming-Dahl does not teach of the external impairments being AM interferences or thermal impairments.

Bradley teaches that it was well known in the art to consider external impairments such as AM interferences and thermal impairments, (col. 1, line 43-col. 2, line 11) so that line impairments can be detected and eliminated.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Fleming-Dahl by considering AM and thermal impairments as taught by Bradley so that line impairments can be eliminated.

***Allowable Subject Matter***

8. Claims 14,26 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

9. Applicant's arguments with respect to claims 5-40 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

10. Any response to this action should be mailed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

or faxed to:

(703) 872-9306, (for formal communications intended for entry)

Or:

(703) 872-9314, (for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal  
Drive, Arlington, VA, Sixth Floor (Receptionist).

11. Any inquiry concerning this communication or earlier communications from the  
examiner should be directed to Ovidio Escalante whose telephone number is (703) 308-6262.  
The examiner can normally be reached on Monday to Friday from 6:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's  
supervisor, Fan Tsang, can be reached on (703) 305-4895. The fax phone number for this Group  
is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35  
U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be  
addressed to [fan.tsang@uspto.gov].



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All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Ovidio Escalante  
Examiner  
Group 2645  
March 12, 2004

FAN TSANG  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

A handwritten signature in black ink, appearing to read 'Fan Tsang', is written over the printed name and title.